

Studies on Schismatoglottideae (Araceae) of Borneo XXXI - *Piptospatha insignis* re-found

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ABSTRACT

Piptospatha insignis N.E. Br. has been re-found in the wild in Lawas District, Limbang Division, Sarawak, Malaysian Borneo for the first time since its discovery (at an unspecified North Bornean location) by Frederick Burbidge sometime between 1877 and 1878. A modified species description and photographs of the living plant and reproductions of the original illustrations are presented.

Keywords

Araceae, *Piptospatha*, Schismatoglottideae, geology, sandstone, Malaysian Borneo, Sarawak.



Figure 1. *Piptospatha insignis* N.E. Br. Plate from *The Gardeners' chronicle*, n.s. 11, 138-139, Fig.20 (1879).

Introduction

Highlighting remarkable aroids known from only single collections Boyce & Wong (2012) drew attention to *Piptospatha insignis* N.E.Br., the Type species of the genus *Piptospatha*, not re-found in the wild for over 135 years. It was noted that the geographical imprecision of Burbidge's collecting site was an impediment to relocating the species in the wild, especially since so many rheophytic aroids are locally endemic, although narrowing down the possible search area could be aided from the literature and herbarium specimen data.

It is known, based on notes accompanying the description of *P. insignis* (Brown 1879), that he (Brown) at the time had another Burbidge collection to hand representing another probable new genus. This plant was *Gamogyne* (now *Piptospatha*) *burbidgei* which Burbidge collected from Bukit Sagan, a mountain on the border with Brunei and that this was received at Kew on 21 February 1878.

Burbidge collected *P. insignis* under his number '95'. Assuming Burbidge's collection numbering to be in chronological order, the implication is that *P. insignis* was collected relatively early in his time in Borneo, although it is to be admitted that Burbidge was decidedly sporadic in recording collecting numbers and no collections exists that are 'near' '95', enabling a more precise locality to be guessed. From Burbidge's (1880) travelogue, it is known that he arrived at Labuan Island, in Brunei Bay, in August 1877. By September of 1877 Burbidge was collecting near the head of the Lawas and Meropok rivers, before returning to Labuan. On Thursday, 29 November 1877, Burbidge accompanied by Peter Veitch, started out for Kinabalu by way of the Tawaran River, and Kalawat Peak. They then returned to Labuan, and in January 1878 made a boat journey up the Limbang and Pandarowan rivers as far as Bukit Sagan, from where Burbidge collected *Gamogyne burbridgei*. Regrettably, this collection is unnumbered, and thus it is impossible to ascertain if it was gathered before or after *P. insignis*, but it is known that at the time Brown was describing *P. insignis* in 1878 the plants cultivated at Kew had grown well enough to enable a fine plate (Fig. 1) to be prepared in time for Brown to publish the new name on 1st February 1879. These plants remained in fine enough health to be used to produce the watercolour (prepared in July 1881) that accompanies Hooker's *Curtis's Botanical Magazine* article published 1st December 1881 (Hooker 1881; Fig. 2). There is no surviving record of when Kew 'lost' the last living plant of *P. insignis*.

Another useful lead appears in the Appendix to "*The Gardens of the Surt*" (Burbidge, 1880) where is written "Of the new genera discovered two have very pretty spathes, and if they can be successfully cultivated will prove very interesting and ornamental stove plants. *Piptospatha insignis* N.E.Br., a pretty little "rock arad" (*sic*) "found on sandstone boulders in the beds of mountain streams, has a tuft of lance-shaped leaves and dainty white spathes tipped with pink."

On balance, it seemed most likely that *P. insignis* was collected during the same trip that Burbidge gathered *P. burbridgei* and that sandstone waterfalls in Limbang were the area in which to concentrate the search.

Fieldwork in January 2013, at a popular tourist site not far from Lawas town, Lawas District of Limbang Division, Sarawak, located a large (and ironically well-known, at least to picnickers and people out for a cooling swim) sandstone waterfall, Air Terjun Melasak (Fig. 3). Clambering over the wet rocks soon located clumps of a flowering aroid that was within minutes confirmed as *Piptospatha insignis* (Fig. 4). The plants accord almost perfectly with the original

illustrations, although there are some hitherto unrecorded colourations, and dimensions. These are here accounted for in an amended description.



Figure 3. Air Terjun Melasak, Lawas District, Limbang Division, Sarawak, Malaysian Borneo.

Piptospatha insignis N.E. Br., Gard. Chron. n.s., 11: 138, fig.20 (1879); Engl., Monogr. Phan. [A.DC. & C.DC.] 2: 644-645 (1879); Hooker, Curtis's Bot. Mag. 107, t. 6598 (1881); Engl., Pflanzenr. (Engler) 55(IV.23Da): 127 (1912); Bogner & Hay, Telopea 9(1): 206-207 (2000). Type: Cult. RBG Kew ex 'North Borneo', F.W. Burbidge 95 sub N.E. Brown s.n. (holo K!, iso BM!, FI-B!).

Diminutive clumping rheophytic herb to c. 14 cm tall. *Stem* condensed, c. 1 cm diam. *Leaves* several per module, and many together in a clump, erect to arching; *petiole* shorter than the blade, 3-5 cm long, sheathing at the extreme base, wings extended into a ligular portion to 5 cm long drying dark brown; *leaf blade* very narrowly lanceolate to very narrowly elliptic 9-14 cm long \times 0.8-1.8 cm wide, stiffly coriaceous, dark green adaxially, paler abaxially, the base cuneate-decurrent, asymmetric, the tip acuminate and apiculate for 2-3 mm, the margin slightly revolute; midrib abaxially and adaxially prominent, with 3 fine primary lateral veins on each side diverging at c. 25° running to a marginal vein; secondary venation adaxially obscure, abaxially very faint; tertiary venation obscure. *Inflorescence* solitary (to 2-3 together, but then interspersed with foliage leaves); *peduncle* exceeding the petioles, 6-9 cm long, pale pink to reddish, subtended by a dark brown prophyll to c.

half way. *Spathe* at first erect, then slightly nodding at anthesis, white suffused pink, the apex entirely pink, slightly upturned, apiculate for 2 mm, interior distally with c. 12 deep pink longitudinal ridges. *Spadix* 1.5-1.7 cm long, subcylindric, shortly stipitate with the stipe fully adnate to the spathe; *pistillate flower zone* c. 5 mm long, 4 mm diam.; *pistils* ovoid, c. 0.8 mm diam., weakly 4-5-angular, greyish white; *stigma* sessile, discoid, weakly angular, as wide as the ovary, dull greyish; *interpistillar staminodes* absent among the pistils; two rows of angular staminodes present along the adaxial side of the stipe, a few at the base of the pistillate flower zone on the abaxial side, these stipitate, clavate, slightly taller than the pistils, the tops c. 0.6 mm diam., weakly rhomboidal, greyish white; *sterile interstice* absent; *staminate flower zone* subcylindric, obtuse, slightly wider than female zone, c. 8 mm long; *stamens* free, crowded, and not obviously grouped into discrete flowers, c. 0.6 mm across, with the connective elevated into a pointed projection c. 1-2 mm long, pale yellowish pink; appendix terminated but a few sterile staminate flowers, white; *thecae* truncate, opening through single apical slit-like pores. *Fruit* unknown, the lower spathe persisting level with the top of the pistillate zone.

Distribution

Known with certainty only Lawas District, Limbang Division, Sarawak, Malaysian Borneo.

Other material seen

Malaysian Borneo, Sarawak, Limbang Division, Lawas District, Lawas, Air Terjun Melasak, 04°49'46.6"N, 115°27'47.6"E, 20 Jan. 2013, M. Lo *et al.* AR-4120 (SAR! - spirit preserved).

Ecology

Miocene sandstone waterfalls under lowland perhumid forest alt. c. 50 m asl.

Notes

The structure of the staminate flowers of *P. insignis* is unlike that of any other species currently assigned to the genus. Given the established importance of staminate flower structure for taxon delimitation in Schismatoglottideae (Boyce & Wong 2008; Wong & Boyce 2010, 2012; Wong *et al.* 2012) this raises interesting questions about the likelihood that despite recent revisions, *Piptospatha* is still not yet fully resolved. Preliminary multi-gene analyses places *Piptospatha insignis* separate from the remaining species.

Etymology

From Latin, *insignis* (remarkable, notable, distinguished). Although not explicitly stated, Brown (1879) repeatedly alludes to the plant's remarkable and attractive appearance.

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Figure 2. *Piptospatha insignis* N.E. Br. Reproduced from Curtis's Botanical Magazine 107 [ser.3, v.37], t.6598 (1881).



Figure 4. *Piptospatha insignis* N.E. Br. A. Plants in habitat. B & C. Detail of mature inflorescence at onset of pistillate anthesis. D. Inflorescence at pistillate anthesis, nearside part of spathe limb artificially removed. E. Detail of staminate flower zone showing the greatly extended connective. The top-most few flowers are sterile. A-C photos by M. Lo; D & E photos by P.C. Boyce.

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